~~CONFIDENTIAL~~

9/24

18 September 1974

MEMORANDUM FOR THE RECORD

SUBJECT: OSI Assessment of Progress in the S&T Bilateral Agreement Project on Electrometallurgy

1. Our initial assessment of US-USSR cooperation in the field of electrometallurgy, prepared in October 1973, remains valid. The US-USSR exchange in this area is proceeding cautiously. To date nothing of significance has been gained or lost by either side. The trend of the cooperation is satisfactory from the US view, but it is too early to estimate what the ultimate gains and losses may be. Although no significant technological information is believed to have been lost through the exchange itself, there is a good possibility a great deal of information is being transferred outside this official channel via the contacts of Soviet individuals with various US companies.

2. Both sides have great interest in high nitrogen content steels. As stated in our 4 March 1974 comment on this project, one of the most intriguing Soviet claims has been of their ability to produce a weldable one percent nitrogen stainless steel with resistance to corrosion, high toughness and strength levels between 200 and 300 Ksi. However, the only sample obtained by the US had less than one half percent of nitrogen, and the Soviets recently have been inquiring about how best to heat treat and weld this material. There is much interest in finding out the true status of this alloy.

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DATE: JUN 2004

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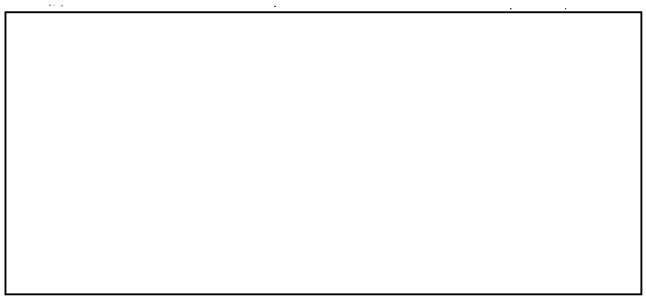

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3. Other areas of considerable interest to the US in this exchange include:

a. The quality and efficiency of processing of Soviet plasma arc remelting guns compared to US (Linde) and/or Japanese guns.

b. Plasma melting of superalloys, Ti alloys, precious metals and electronic materials.

c. The effect on hardware development of the large Soviet commitment in welding R&D and education.

d. Exact composition of ESR fluxes for titanium.

e. Status of plasma welding and melting technology at IMET relative to IES.

4. There is also considerable interest in the proposed 5th area of cooperation in the field of joining materials in the solid state. Mainly through the efforts of Professor N.F. Kazakov, head of the Diffusion Bonding Laboratory of the Moscow Technical Institute of the Meat and Dairy Industry, the USSR is the world leader in diffusion bonding technology and the only country to use this process in mass production. In January 1974, Professor Kazakov announced that his proposal for creation of a research center for diffusion working of metals had been approved. We would be interested in details of the processes and materials combinations in production and in R&D, their properties, advantages, applications and costs. How are they evaluated and controlled for quality assurance? Who besides Kazakov is doing work in this area and how good is it?

5. For their part, the Soviets have shown great interest in nitrogen solubility in metals, US ceramic welding fluxes, and in welding pipe for pipelines, especially in the Arctic.